

Indiana's Academic Standards 2010 Environmental	Indiana's Academic Standards 2016 Environmental
Env.1.1 Know and describe how ecosystems can be reasonably stable over hundreds or thousands of years. Consider as an example the ecosystem of the Great Plains prior to the advent of the horse in Native American Plains societies, from then until the advent of agriculture, and well into the present.	
Env.1.2 Understand and describe that if a disaster occurs — such as flood or fire — the damaged ecosystem is likely to recover in stages that eventually result in a system similar to the original one.	
Env.1.3 Understand and explain that ecosystems have cyclic fluctuations, such as seasonal changes or changes in population, as a result of migrations.	Env.1.1 Understand and explain that ecosystems have cyclic fluctuations, such as seasonal changes or changes in population, as a result of migration, birth, and mortality.
Env.1.4 Understand and explain that human beings are part of Earth's ecosystems and give examples of how human activities can, deliberately or inadvertently, alter ecosystems.	Env.1.2 Understand and explain that human beings are part of Earth's ecosystems and give examples of how human activities can, deliberately or inadvertently, alter ecosystems.
Env.1.5 Explain how the size and rate of growth of the human population in any location is affected by economic, political, religious, technological, and environmental factors, some of which are influenced by the size and rate of growth of the population.	Env.6.1 Demonstrate, calculate, and explain how factors such as birth rate, death rate, and migration rate determine growth rates of populations.
Env.1.6 Describe and give examples about how the decisions of one generation both provide and limit the range of possibilities open to the next generation.	Env.6.2 Explain how the size and rate of growth of the human population in any location is affected by economic, political, religious, technological, and environmental (resource availability) factors
Env.1.7 Recognize and explain that in evolutionary change, the present arises from the materials of the past and in ways that can be explained, such as the formation of soil from rocks and dead organic matter.	Env.2.1 Describe how matter cycles through sources and sinks and how energy is transferred. Explain how matter and energy move between and within components of an environmental system.

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Env.1.8 Recognize and describe the difference between systems in equilibrium and systems in disequilibrium.	Env.1.3 Recognize and describe the difference between systems in equilibrium and systems in disequilibrium. Describe how steady state is achieved through negative and positive feedback loops.
Env.1.9 Diagram the cycling of carbon, nitrogen, phosphorus, and water.	Env.1.4 Diagram the cycling of carbon, nitrogen, phosphorus, and water and describe the human impacts on each.
Env.1.10 Identify and measure biological, chemical, and physical factors within an ecosystem.	Env.1.5 Identify and measure biological, chemical, and physical (abiotic and biotic) factors within an ecosystem.
Env.1.11 Locate, identify, and explain the role of the major Earth biomes and discuss how the abiotic and biotic factors interact within these ecosystems.	Env.1.6 Describe the difference between weather and climate. Locate, identify, and describe the major Earth biomes. Explain how biomes are determined by climate (temperature and precipitation patterns) that support specific kinds of plants.
Env.1.12 Explain the process of succession, both primary and secondary, in terrestrial and aquatic ecosystems.	
Env.2.1 Understand and describe how layers of energy-rich organic material have been gradually turned into great coal beds and oil pools by the pressure of the overlying earth. Recognize that by burning these fossil fuels, people are passing stored energy back into the environment as heat and releasing large amounts of carbon dioxide.	Env.2.6 Understand and describe how layers of energy-rich organic material have been gradually turned into great coal beds and oil pools by the pressure of the overlying earth. Recognize that by burning these fossil fuels, people are passing stored energy back into the environment as heat and releasing large amounts of matter such as carbon dioxide and other air pollutants.
Env.2.2 Recognize and explain that the amount of life any environment can support is limited by the available energy, water, oxygen, and minerals, and by the ability of ecosystems to recycle organic materials from the remains of dead organisms.	Env.2.3 Recognize and explain that the amount of life any environment can support is limited by the available energy, water, oxygen, nutrients and minerals, and by the ability of ecosystems to recycle organic materials from the remains of dead organisms.

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Env.2.3 Describe how the chemical elements that make up the molecules of living things pass through food webs and are combined and recombined in different ways.	Env.8.3 Recognize and explain that in evolutionary change, the present arises from the materials of the past and in ways that can be explained, such as the formation of soil from rocks and dead organic matter.
Env.2.4 Cite examples of how all fuels have advantages and disadvantages that society must question when considering the trade-offs among them, such as how energy use contributes to the rising standard of living in the industrially developing nations. However, explain that this energy use also leads to more rapid depletion of Earth's energy resources and to environmental risks associated with the use of fossil and nuclear fuels.	Env.2.8 Cite examples of how all fuels, renewable and nonrenewable, have advantages and disadvantages that society must question when considering the trade-offs among them, such as how energy use contributes to the rising standard of living in the industrially developing nations. However, explain that this energy use also leads to more rapid depletion of Earth's energy resources and to environmental risks associated with the use of fossil and nuclear fuels.
Env.2.5 Describe how decisions to slow the depletion of energy sources through efficient technology can be made at many levels, from personal to national, and they always involve trade-offs of economic costs and social values.	Env.2.9 Describe how decisions to slow the depletion of energy sources through efficient technologies can be made at many levels, from personal to national, and these technologies always involve trade-offs of economic costs and social values.
Env.2.6 Illustrate the flow of energy through various trophic levels of food chains and food webs within an ecosystem. Describe how each link in a food web stores some energy in newly made structures and how much of the energy is dissipated into the environment as heat. Understand that a continual input of energy from sunlight is needed to keep the process going.	Env.2.2 Identify the different forms of energy and understand that energy may be converted from one form to another, but cannot be created or destroyed.
Env.3.1 Demonstrate and explain how factors such as birth rate, death rate, and migration rate determine growth rates of populations.	Env.6.3 Describe and give examples about how the decisions of one generation both provide and limit the range of possibilities open to the next generation.
Env.3.2 Demonstrate how resources, such as food supply, influence populations.	Env.6.4 Explain how the carrying capacity of an ecosystem may change as availability of resources changes.

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Env.4.1 Differentiate between renewable and nonrenewable resources, and compare and contrast the pros and cons of using nonrenewable resources.	Env.2.7 Differentiate between renewable and nonrenewable resources, and compare and contrast the pros and cons of using nonrenewable resources.
Env.4.2 Demonstrate a knowledge of the distribution of natural resources in the U.S. and the world, and explain how natural resources influence relationships among nations.	Env.8.1 Demonstrate a knowledge of the distribution of natural resources in the U.S. and the world, and explain how natural resources influence relationships among nations.
Env.4.3 Recognize and describe the role of natural resources in providing the raw materials for an industrial society.	Env.2.11 Recognize and describe the role of natural resources in providing the raw materials for an industrial society.
Env.4.4 Give examples of the various forms and uses of fossil fuels and nuclear energy in our society.	Env.2.5 Give examples of the various forms and uses of fossil fuels and nuclear energy in our society.
Env.4.5 Recognize and describe alternative sources of energy provided by water, the atmosphere, and the sun.	Env.2.4 Recognize and describe the different sources of energy, including fossil fuels, nuclear, and alternative sources of energy provided by water, wind, geothermal, biomass/biofuels, and the sun.
Env.4.6 Identify specific tools and technologies used to adapt and alter environments and natural resources in order to meet human physical and cultural needs.	Env.1.7 Identify tools and technologies used to adapt and alter environments and natural resources in order to meet human physical and cultural needs.
Env.4.7 Understand and describe the concept of integrated natural resource management and the values of managing natural resources as an ecological unit.	Env.4.1 Explain environmental policies/organizations (Clean Water Act, Clean Air Act, Endangered Species Act, Species Survival Plan, Resource Conservation and Recovery Act, Department of Energy, and the World Health Organization) and identify their impact.
	Env.8.2 Understand and describe the concept of integrated natural resource management and the values of managing natural resources as an ecological unit.

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	Env.8.4 Describe how agricultural technology requires trade-offs between increased production and environmental harm and between efficient production and social values.
	Env.8.5 Describe and examine how water is controlled in developed and undeveloped nations.
Env.4.8 Understand and describe the concept and the importance of natural and human recycling in conserving our natural resources.	Env.7.9 Describe and explain the product life cycle and waste stream and its implications to waste management. Explain the difference between reduce, reuse, and recycle.
	Env.8.6 Understand and describe the concept and the importance of natural and human recycling in conserving our natural resources.
Env.4.9 Recognize and describe important environmental legislation, such as the Clean Air Act and the Clean Water Act.	Env.4.2 Understand that environmental policies/decisions have negative and positive impacts on people, societies, and the environment.
Env.5.1 Describe how agricultural technology requires trade-offs between increased production and environmental harm and between efficient production and social values.	
Env.5.2 Understand and explain that waste management includes considerations of quantity, safety, degradability, and cost. Also understand that waste management requires social and technological innovations because waste-disposal problems are political and economic as well as technical.	Env.8.7 Understand and explain that waste management includes considerations of quantity, safety, degradability, and cost. Also understand that waste management requires social and technological innovations because waste-disposal problems are political and economic as well as technical.
Env.5.3 Understand and describe how nuclear reactions release energy without the combustion products of burning fuels, but that the radioactivity of fuels and by-products poses other risks which may last for thousands of years.	Env.2.10 Understand and describe how nuclear reactions release energy without the combustion products of burning fuels, but that the radioactivity of fuels and by-products poses other risks which may last for thousands of years. Understand and assess the uses of nuclear fission and fusion, including the implications for society.

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Env.5.4 Identify natural Earth hazards, such as earthquakes and hurricanes, and identify the regions in which they occur as well as the short-term and long-term effects on the environment and on people.	Env.3.4 Identify natural Earth hazards, such as earthquakes and hurricanes, and identify the regions in which they occur as well as the short-term and long-term effects on the environment and on people.
Env.5.5 Differentiate between natural pollution and pollution caused by humans and give examples of each.	Env.7.4 Differentiate between natural pollution and pollution caused by humans.
Env.5.6 Compare and contrast the beneficial and harmful effects of an environmental stressor, such as herbicides and pesticides, on plants and animals. Give examples of secondary effects on other environmental components.	Env.7.5 Compare and contrast the effects of environmental stressors (i.e. herbicides, pesticides) on plants and animals. Give examples of secondary effects on other environmental components.
	Env.3.1 Identify and describe geomorphic processes controlled by tectonics (i.e. volcanic activity, uplift, and shaping of landforms).
	Env.3.2 Identify and describe tornado formation with the use of a weather map.
	Env.3.3 Read and describe a weather map in terms of pressure systems, fronts, and changing weather patterns.
	Env.5.1 Explain how variation within a species increases the chances of survival of the species under changing environmental conditions.
	Env.5.2 Explain how the great diversity of species increases the chance that at least some living organisms will survive in the event of major global changes.
	Env.5.3 Explain genetic engineering and identify implications on the environment and society.

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	Env.5.4 Describe, provide examples, and contrast GMO products, organic products, and conventional products. Describe and explain the environmental concerns associated with GMOs.
	Env.5.5 Identify the indirect and direct threats to biodiversity (e.g. habitat loss and destruction, invasion by exotic species, commercial overfishing and hunting, pollution, climate change, and bioaccumulation and biomagnification of toxins).
	Env.5.6 Identify and explain the three levels of biodiversity: genetic, species, and ecosystem.
	Env.7.1 Explain the factors that influence weather and climate, the action of gravitational forces, and the rotation of the Earth.
	Env.7.2 Describe how weather can be influenced by global climatic patterns, such as El Niño and La Niña.
	Env.7.3 Identify evidence, consequences, and prevention for climate change produced by anthropogenic sources.
	Env.7.6 Explain what common household toxins are, what to do in an emergency, and what proper disposal is.
	Env.7.7 Identify and describe the major air pollutants and their sources and impacts on the environment and human health.
	Env.7.8 Understand and explain how the burning of fossil fuels releases energy, waste heat and matter (air pollutants).